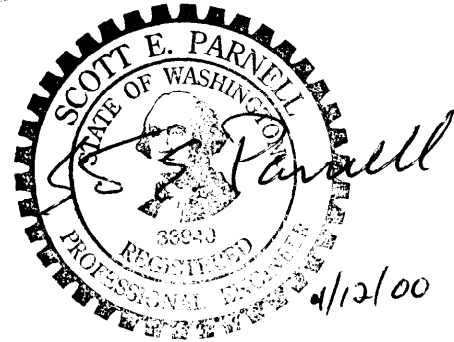



EXHIBIT E

TECHNICAL SPECIFICATION FOR EARTHWORK AND EXCAVATED MATERIALS HANDLING

BHI-DIS SEP 7 4/19/2000



EXPIRES: 3/20/02

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			SHEET 1 of 41			

TECHNICAL SPECIFICATION FOR EARTHWORK AND EXCAVATED MATERIALS HANDLING

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TECHNICAL SPECIFICATION FOR EARTHWORK AND EXCAVATED MATERIALS HANDLING

1.0 GENERAL

1.1 SUMMARY

This specification establishes quality and workmanship requirements, and defines how quality is measured for earthwork and excavated materials handling activities.

1.2 ABBREVIATIONS

The abbreviations listed below, where used in this specification, shall have the following meanings:

ACM	asbestos-containing materials
ALARA	as low as reasonably achievable
AOC	area of contamination
ANSI	American National Standards Institute
ARA	Airborne Radioactivity Area
ASCII	American Standard Code of Information Interchange
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
CA	contaminated area
CADD	computer aided drafting and design
CFR	Code of Federal Regulations
DOT	Department of Transportation
DN	diameter nominal
ERC	Environmental Restoration Contractor Team
ERDF	Environmental Restoration Disposal Facility
FGCC	Federal Geodetic Control Committee
HCA	High Contamination Area
HRA	High Radiation Area
t	metric tons
NAD 83 ('91)	North American Datum of 1983, adjusted in 1991
NAVD 88	North American Vertical Datum of 1988
NESHAP	National Emissions Standards of Hazardous Air Pollutants
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration

PPE	personal protection equipment
QA/QC	Quality Assurance/Quality Control
RA	Radiation Area
RBA	Radiological Buffer Area
RCW	Revised Code of Washington
RMA	radioactive material area
SCA	Soil Contamination Area
SSRS	Subcontractor Submittal Requirements Summary
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation

1.3 REFERENCES

The following references contain general information about the Hanford Site, geophysical interpretations of specific waste sites within the scope of work, acceptance criteria for disposal of contaminated material, and permit criteria for certain activities at the Hanford Site.

PNL-6415, Rev. 6	Hanford Site National Environmental Policy Act Characterization
BHI-00139, Rev. 3	Environmental Restoration Disposal Facility Waste Acceptance Criteria
BHI-01092, Rev. 1	100-NR-1 Treatment, Storage, Disposal Units Engineering Study
BHI-01271, Rev. 0	Data Summary Report for 116-N-1 and 116-N-3 Facility Soil Sampling to Support Remedial Design
BHI-DE-01, CADP-02	Drawing Format and Standards Guide
DOE/RL-93-80 Rev. 0	Limited Field Investigation Report for the 100-NR-1 Operable Unit
DOE/RL-96-11 Rev. 0	1301-N and 1325-N Liquid Waste Disposal Facilities Limited Field Investigation
DOE/RL-96-39 Rev. 0	100-NR-1 Treatment, Storage, Disposal Units Corrective Measures Study/Closure Plan

ERC-RAWD	Best Management Practice for Wet Cleaning and/or Decontamination of Equipment Working in Contaminated Areas, CCN 066634, dated March 1, 1999
HSRCM-01	Hanford Site Radiological Control Manual
WHC-SD-EN-TI-251, Rev. 0	100-N Area Technical Baseline Report

1.4 CODES, STANDARDS, LAWS, AND REGULATIONS

Unless otherwise approved or shown, the following Codes, Standards, Laws, and Regulations of the latest issue, at the time of bid, shall apply to establish the minimum requirements for activities within the scope of this specification. Referenced test methods, specifications, and recommended practices are to be used to verify material properties and to identify acceptable practices. Failure to identify applicable codes and standards does not negate the requirement to be knowledgeable of or to comply with applicable codes, standards, laws, and regulations.

10 CFR 835	Occupational Radiation Protection
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 61	National Emissions Standards for Hazardous Air Pollutants
40 CFR 122	EPA Administered Permit Programs
40 CFR 260-299	Protection of the Environment
49 CFR 172.504	General Placarding Requirements
49 CFR 173.24	General Requirements for Packagings and Packages
49 CFR 393	Parts and Accessories Necessary for Safe Operation
49 CFR 566	Manufacturer Identification
49 CFR 567	Certification
49 CFR 571	Federal Motor Vehicle Safety Standards
63 FR 7857	National Pollutant Discharge Elimination System for Storm Water Discharges from Construction Activities

ANSI/ASME	Applicable B30 Standards
RCW 46.37	Vehicle Lighting and Other Equipment
RCW 46.44	Size, Weight, Load
ST-4508	State Waste Discharge Permit for Hydrotest, Maintenance, and Construction
ST-4509	State Waste Discharge Permit for Cooling Water and Condensate
ST-4510	Hanford Storm Water NPDES Permit
WAC 173-216	State Waste Discharge Permit Program
WAC 173-303	Washington State Dangerous Waste Regulation
WAC 196	Professional Engineers and Land Surveyors
WAC 246-247	Radiation Protection – Air Emissions
WAC 332-130	Minimum Standards for Land Boundary Surveys and Geodetic Control Surveys and Guidelines for the Preparation of Land Descriptions
WSDOT M 41-10	Standard Specifications for Road, Bridge, and Municipal Construction

1.5 DEFINITIONS

1.5.1 Area of Contamination (AOC)

The plan area defined as 25 m beyond the limits of excavation.

1.5.2 Construction Drawings

Drawings and/or shop drawings supplied by SUBCONTRACTOR to be used for construction.

1.5.3 Container Handler

Generic term for manufacturers' standard equipment (e.g., a forklift or haul truck) for handling the specified containers.

1.5.4 Container Transfer Facility

The facilities and associated roadways and surfaced areas devoted to radiological surveying of the containers, container decontamination, container staging, container transfer to and from uncontaminated haul vehicles, and waste tracking.

1.5.5 Contaminated Material

Soil (ranging from silt to boulders) and material (concrete, timbers, piping, wire, trash, vegetation, etc.) contaminated above cleanup levels.

1.5.6 Disturbed Areas

Waste site excavations, borrow pits, access ramps, haul roads, the Container Transfer Facility, and ancillary facilities.

1.5.7 Project Drawings

Drawings supplied by CONTRACTOR and contained in Exhibit "F," Project Drawings.

1.5.8 Stripping

Removal and storage of uncontaminated surface material for future use as excavation backfill, including roots, organic materials, vegetation less than 1 m high, debris, cobbles, and boulders.

1.5.9 Survey Drawings

SUBCONTRACTOR supplied drawings showing grade and topography based on new civil survey.

1.5.10 Uncontaminated Material

Soil (ranging from silt to boulders) and construction material (concrete, timbers, piping, wire, etc.) excavated to gain access to contaminated material and verified at contaminant levels below the cleanup levels (radiological or chemical). Verification is not within the Scope of Work.

Areas or materials designated by the CONTRACTOR as "uncontaminated," may require radiological posting prior to verification of contaminant levels below the cleanup levels.

1.5.11 Waste Profile

The categorization of excavated materials in accordance with Environmental Restoration Disposal Facility (ERDF) waste acceptance criteria and the Supplemental Waste Acceptance

Criteria for Bulk Shipments to the ERDF (Attachment 1) by physical characteristics (e.g., soil, debris), chemical characteristics, contaminants present (e.g., specific radionuclide), and the level of contamination.

1.6 TECHNICAL SUBMITTALS

Submittals stated herein and elsewhere in this specification shall be submitted for review and approval in accordance with Exhibit "I," Subcontractor Submittal Requirement Summary (SSRS).

1.6.1 Plan Submittal Requirements

Submit for approval all components listed below. Submittals shall clearly state assumptions, conditions, and list references used. Any changes or revisions to original submittals will require resubmittal of documents. The following submittals shall be made:

1.6.1.1 Earthwork and Excavated Materials Handling Plan

A plan that details the methods, equipment, and scheduling of activities associated with earthwork and excavated materials handling. The plan shall include, but not be limited to, the following:

- Radiological control layout
- Radiological shielding requirements
- Stripping limits
- Excavation/demolition methods and material handling techniques
- Drainage Plan for Erosion and run-on/run-off control
- Dust control of temporary and/or long-term excavation and stockpile faces
- Size-reduction method for pipe, concrete, timber, and steel structures, to include removal and materials handling concepts
- Spill prevention and mitigation for materials such as contaminated materials, fuel, lube oil, and hydraulic oil
- Methods for protection of utilities
- Waste minimization, storage, packaging, and disposal

- Air emissions controls
- Management of water discharges
- Container liner handling procedures
- Decontamination methods
- Method for transferring containers to "uncontaminated zone"
- Container staging/management procedures (full and empty containers)
- Container waste tracking system from the point of filling to the point of departure from the Container Transfer Facility
- Method to ensure containers meet road weight restrictions
- Soil storage areas
- Asbestos abatement

1.6.1.2 Traffic/Access Control Plan

The SUBCONTRACTOR shall prepare and submit a Traffic/Access Control Plan describing at a minimum, how traffic and personnel will be directed, including speed limits and signage, to facilitate cleanup efforts and avoid accidents, for CONTRACTOR review. The Plan shall also describe how the SUBCONTRACTOR will maintain access control (allowing only authorized personnel into site boundaries), where fencing (permanent or temporary) and gates will be installed, when gates will be locked, and how gates will be controlled when unlocked.

1.6.1.3 As Low As Reasonably Achievable Plan

The SUBCONTRACTOR shall prepare and submit an as low as reasonably achievable (ALARA) plan describing at a minimum, how doses will be controlled, how dose tracking will take place, individual dose estimates, and any shielding requirements.

1.6.1.4 Grouting Plan

The SUBCONTRACTOR shall prepare and submit a grouting Plan describing at a minimum, sequencing, staging locations for grouting equipment, proposed grout mix, equipment to be used, location and methods for core drilling panels, and methods for placement of grout.

1.6.1.5 Construction Drawings

Construction drawings shall include, but not be limited to, the following:

- Road layout, sections, alignments, and grades compatible with the use intended
- Site layout plan showing proposed waste site and pipeline excavation plans and sections showing intended excavations and laybacks, including laydown and staging areas, access ramps, if appropriate, proposed haul roads, stockpile areas, storage areas, erosion and run-off/on controls, and container transfer facilities within approved access and transportation corridors
- Container Transfer Facility plans, sections, alignments, and grades
- Water fill station and fire hydrant tie-ins (components), pipe size, and pipe runs

2.0 MATERIALS AND EQUIPMENT

Unless otherwise specified, furnish and assume full responsibility for materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and other facilities and incidentals necessary for the furnishing, performance, quality control, testing, start-up, and completion of the Work.

2.1 MATERIALS

2.1.1 Crushed Surfacing Material

2.1.1.1 Top Course

Washington State Department of Transportation (WSDOT) M 41-10, 9-03.9(3), "Crushed Surfacing," for Top Course. The percent fracture requirement may be reduced to sixty percent (60%) from the seventy-five percent (75%) specified in the WSDOT standard specification.

2.1.1.2 Base Course

WSDOT M 41-10, 9-03.9(3), "Crushed Surfacing", for Base Course. The percent fracture requirement may be reduced to sixty percent (60%) from the seventy-five percent (75%) specified in the WSDOT standard specification. Crushed Surfacing for Base Course shall be obtained from stockpile at ERDF.

2.1.2 Subgrade

Material used for subgrade under the Container Transfer Facility and the related haul roads shall be existing site materials free of brush, weeds, vegetation, grass, and other debris.

2.1.3 Fill

Material used for fill above the subgrade shall be well graded existing site materials free of brush, weeds, vegetation, grass, and other debris as designated by the CONTRACTOR.

2.1.4 Backfill

Backfill material for the excavations shall be uncontaminated soil from on site materials as identified by the CONTRACTOR, or material from one of the approved borrow sites (refer to project drawings). The SUBCONTRACTOR may develop borrow pits both laterally and vertically within limits of the excavation permit. Material for the top 610 mm of backfill shall contain no rock larger than 152 mm. Materials from stripping shall be placed in the top 102 mm and shall be spread over the backfilled excavations.

2.1.5 Water

Water for dust control, compaction, or other approved uses is available at the hydrant, as shown on the project drawings. Fill pipe shall be tagged with a "Non-Potable Water" sign. Water from existing mains is not potable.

2.1.6 Soil Fixant

Soil fixant used to prevent dust movement shall be composed of non-regulated substances suitable for spray application. Prior to initiating work, manufacturer's descriptive literature describing product components and application instructions shall be submitted for approval.

2.1.7 Container Liner

The liner shall be a minimum 0.15 mm (6-mil) thick, flame resistant, clear, white, or black low-density polyethylene form-fitted type container liner (i.e., preformed with four sealed interior corner/seams, no envelope or flat style liners) of sufficient size to allow overlapping closure and sealing after container is filled. Liners shall be stored outside of the radioactive material storage area (RMA) of the Container Transfer Facility according to manufacturer's recommendations.

The liner shall be sized to fit inside the container and be folded over to completely surround the maximum container load.

The liner shall be sized such that when placed inside the empty container, the outside of the container is protected from spillage (contamination) during the loading operation.

2.1.8 Grout

Grout shall be a controlled density fill meeting the following specifications:

2.4-3.4 mPa at 28 day pumpable mix:

- 225 mm to 275 mm slump
- 120 kg/m³ Type II cement minimum
- 360 kg/m³ Flyash minimum
- 6% air entrainment
- “DuraFill™” added

2.1.9 Exclusion Fence

Exclusion fence shall be bright, visible orange colored, 1.2 m tall, made of polypropylene or high-density polyethylene with a breakload of 540 kg per m (360 lbs per ft) to 1,100 kg per m (740 lbs per ft.).

2.1.10 Concrete Barriers

Concrete barriers shall be type 2 concrete barriers, as defined in WSDOT Standard Plans C-8 or approved equal.

2.2 INSPECTION AND TESTING OF MATERIALS

The right to inspect and test materials to verify conformance with the specification requirements shall be reserved by the CONTRACTOR. If requested, material samples shall be furnished to the CONTRACTOR at no additional cost. Materials not in conformance with the specification requirements shall be removed from the site and replaced at no additional expense to the CONTRACTOR.

2.3 EQUIPMENT

2.3.1 General

Equipment designs shall be adequate for the intended service, compatible with containers, and comply with CODES, STANDARDS, LAWS, AND REGULATIONS. Equipment, either owned or leased, shall comply with Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910 and 29 CFR 1926, as applicable, and the American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME) B30 series of standards. Standard designs shall be modified, as necessary, even if such modifications are not specified herein. Equipment shall be operated by qualified personnel to safeguard adjacent workers from injury or prevent accidental release of contaminated material.

2.3.2 Equipment Safety

Excavation and materials handling equipment shall meet safe operating requirements (e.g., OSHA compliant). Vehicles operated on public highways shall comply with legal requirements. The vehicles shall conform to applicable federal and Washington State laws, including the following requirements, at a minimum: 46 RCW, 49 CFR (172 Appendix C, 393, 566, 567, 571). The vehicles shall also conform to applicable Department of Transportation (DOT) regulations. Vehicles shall include the following minimum safety equipment: fire extinguisher, reflector kit, first aid kit, and backup alarm.

A rigging plan shall be submitted in accordance with Exhibit "G" for any crane work.

Prior to mobilization, submit a letter of compliance stating that the equipment has been inspected and meets the requirements of Subcontract Documents.

2.3.3 Materials Handling Equipment

The excavated materials handling equipment and facilities shall be fully coordinated and compatible with the roll-on/roll-off containers and flatbeds specified below.

2.3.3.1 ERDF Containers

- Container Type: roll-on/off with open top
- Inside Dimensions: 6.10 m long, 2.13 m wide, 1.32 m tall
- Payload: 18.1 t, maximum

- Features: steel construction; single top-hinged or side-hinged end gate 203 mm diameter wheels at gate end; painted identification number; heavy duty top edge side rail and fork pockets to accommodate lifting by forklift.

2.3.3.2 B-25 (or approved equal) Waste Containers

- Container Type: Containers meeting requirements of 49 CFR 173.24
- Inside dimensions: 1.83 m long, 1.17 m wide, 1.19 m tall
- Payload: 4.53 t per container including grout cap
- Features: steel construction, fork risers to accommodate lifting by forklift

2.3.3.3 Roll-on/Roll-off Flatbeds

- The dimensions of the ERDF flatbeds are 2.5 m x 6.7 m with a payload capacity of 17.2 t.

2.3.3.4 Materials Handling Vehicles

Where required, excavated materials handling vehicles (Haul Trucks) shall haul the excavated materials from the excavation sites to either the appropriate Container Transfer Facility, nearby stockpiles, or storage areas. The vehicles typically operate on native materials in the excavation and on crushed surfacing material in the Container Transfer Facility. Some operation on hard-surfaced roadways may also be required. Loads on container haul vehicles will be limited by highway weight restrictions for ERDF destined wastes. The Hanford Site highway weight limit for a tractor-trailer unit with five axles is 36.3 t. Confirm current highway weight limits for vehicles to be operated on public roads. The SUBCONTRACTOR is responsible to ensure over the road weight restrictions are not exceeded. CONTRACTOR may impose weight-limiting controls on the ERDF transport vehicles. Any containers that exceed the weight limits controls will not be loaded and the SUBCONTRACTOR shall be responsible to offload material from the container to meet the weight restrictions. With CONTRACTOR approval, vehicles may be loaded to heavier gross weights for internal hauling (within the 100-N Area).

Haul truck hoist frames shall be the outside rail hoist type with outside to outside rail dimensions of 902 mm (35½ in.). Rails shall have no protruding objects and shall be free of additions that could damage the integrity of the container frame rails or roller structures. Trucks should utilize nominal 102 mm (4 in.) wide hoist frame rails and have side rollers that are 102 mm (4 in.) in diameter with a face of 89 mm (3.5 in.) to 102 mm (4 in.) wide. The haul trucks and hoists shall be configured to safely handle a variety of

containers from several manufacturers having the following common dimensions and characteristics:

- Gross weight of 21.0 t for container and load
- Overall container lengths of from 6.1 m (20 ft.) to 6.7m (22 ft.)
- “Doghouse” type front hook
- Front engagement (or pick up) roller diameter of 102 mm (4 in.) and face length of 142 mm (5 5/8 in.) to 165 mm (6 ½ in.)
- Front engagement roller centerline is 162 mm (6 3/8 in.) above the bottom of the container long sill.
- Front of container hold down skid is 5.94 m (19 ft, 5 ¾ in. from the centerline of the front engagement roller.
- Container hold down skids range from 991 mm (39 in.) to 1.12 m (44 in.) apart (inside to inside) and 1.37m (54 in.) to 1.46 m (57 ½ in.) apart (outside to outside). The skid bottoms drop from 127 mm (5 in.) to 152 mm (6 in.) from the top of the container long sill.
- Container long sills (or rails) are constructed of 152 mm (6 in.)x 51 mm (2 in.) square tubing with 921 (36 ¼ in.) to 940 mm (37 in.) rail spacing inside to inside.
- Container long sills have approximately 152 mm (6 in.) clearance between the bottom of the rail and the bottom of the container cross members.

Hoist frames shall be equipped with a gravity activated container lock to prevent container movement while the hoist frame is in the down position.

The above information is provided using industry standard nomenclature relative to the characteristics and dimensions of CONTRACTOR supplied roll-on/roll-off containers. The information provided to SUBCONTRACTOR, although specific to available knowledge, is intended to ensure SUBCONTRACTOR provides handling equipment compatible with CONTRACTOR’S containers. Ultimately, the SUBCONTRACTOR is responsible for roll-on/roll-off container handling equipment that ensures the safety of personnel and safe operation of equipment during routine operations.

2.3.4 Personal Protection Equipment

Personal protection equipment (PPE) shall meet current standards as defined in Exhibit "G". Respiratory protection shall be administered in compliance Exhibit "G".

3.0 EXECUTION

3.1 FIELD OPERATIONS

3.1.1 Excavation Work Area

3.1.1.1 Exclusion Areas

Exclusion area fence shall be placed where shown on Exhibit "F," Project Drawings; no work shall be performed within the exclusion areas. Any deviations shall require written approval by the CONTRACTOR.

3.1.1.2 Stripping

Strip area for the Container Transfer Facility and haul roads along with areas required to facilitate the use of equipment and/or construction and installation of facilities. Strip work and storage areas, as necessary, to facilitate construction and eliminate potential fire hazards. Stripping shall be to a nominal 150 mm. Handling of stripped materials shall be as directed in Section 3.1.6 of this specification.

3.1.1.3 Civil Surveying

Survey crew personnel shall be competent and experienced in performing land surveys. Work shall be performed using metric system under the direct supervision of a Land Surveyor registered in the State of Washington. Drawings and calculations shall be signed, sealed, and certified by a Land Surveyor registered in the State of Washington.

Standards of accuracy for survey work shall be in accordance with Federal Geodetic Control Committee (FGCC) standards and the minimum standards as set forth in the WAC 332-130. The datum for the horizontal control network in Washington shall be NAD 83. Elevations and benchmarks shall be provided in NAVD 88. The class of control surveys shall be shown on all documents prepared.

Completed survey information shall be submitted in the form of a survey drawing for project review and approval. Survey drawings shall be produced at a metric scale of 1:1000, with contours shown for each 0.5 m of vertical relief in NAVD 88. Survey drawings shall be created on a Computer Aided Design Drafting (CADD) system and shall be in accordance with BHI-DE-01, CADP-02. CADD drawings shall be submitted

electronically in AutoCAD™ 14 or CONTRACTOR approved version (dwg format). An ASCII file of the survey data, as collected by an electronic data collection system and a printout of the data, shall be submitted.

3.1.1.4 Drainage/Erosion Control

The SUBCONTRACTOR shall provide channels or berms around excavations to intercept and direct water away from the work and prevent materials from reaching the Columbia River consistent with the Hanford Stormwater National Pollutant Discharge Elimination System (NPDES) Permit. Excavations shall be maintained in a dewatered condition. Water entering the excavations, including seepage, snow or ice melt, and rainfall, shall be controlled and standing water removed before personnel enter to perform Work. Water removed from the excavation shall be stored in CONTRACTOR approved containers and subsequently sampled and analyzed by the CONTRACTOR prior to disposal. Water removed from the excavation may be used/recycled with CONTRACTOR approval. Methods such as channeling, harrowing, and/or addition of additives shall be considered. Only approved methods shall be employed. Contaminated material containing free water shall be dried prior to excavation. Uncontaminated materials that contain free water may be excavated with prior approval.

3.1.1.5 Excavation Safety

Excavations shall be performed in accordance with OSHA 29 CFR 1926. SUBCONTRACTOR shall document the criteria for each activity requiring a competent person. The excavation shall be inspected by the SUBCONTRACTOR's competent person prior to beginning work each shift. Inspections shall be documented and shall include review of administrative and engineering controls, as appropriate. No personnel or equipment shall enter the excavation until required corrective measures are completed and documented. Equipment and excavated materials shall not approach or be placed near the edge of excavations unless safety measures have been implemented.

3.1.1.6 Inactive Excavations

The SUBCONTRACTOR shall secure access to open excavations by placing adequate physical barriers across any unsecured access points. Danger/Warning signs shall be placed as directed by CONTRACTOR. Walkways or bridges shall be constructed and inspected in accordance with applicable OSHA requirements when an excavation requires access.

3.1.1.7 Access/Egress from Excavations

Access/egress from excavations (e.g., ladders, stairs, and ramps) first aid equipment, PPE, and emergency rescue equipment (e.g., body harness, respirators, etc.) shall be provided in accordance with OSHA 29 CFR 1910 and 1926.

3.1.1.8 Shoring and Bracing

Install and maintain shoring, sheeting, bracing, and sloping necessary to support the sides of the excavation to prevent any movement that may damage adjacent roadways, utilities, or structures, damage or delay work, or endanger the safety and health of personnel. Shoring, sheeting, bracing, and sloping shall be installed and maintained, as required by OSHA and other applicable regulations and agencies.

3.1.1.9 Protection of Utilities

Active utilities shall be protected from damage and disruption of service during excavation activities. Methods for protection of utilities shall be submitted and approved prior to excavation. The SUBCONTRACTOR shall be responsible for field verifying and locating underground utilities prior to excavation activities. Should the SUBCONTRACTOR damage or place out of service any utilities, all associated costs for repair shall be borne by the SUBCONTRACTOR. The CONTRACTOR shall be notified immediately of each incident. Corrective repair work shall be completed by the SUBCONTRACTOR within 24 hours after damage or loss of service.

3.1.1.10 Grouting

Holes in the 116-N-3 Crib cover panels shall be 125 mm diameter and located to avoid cutting through prestressing tendons. The maximum loading per panel shall not exceed 225 kg. Grout shall be placed using a boom style, truck mounted concrete pump with a minimum 31 m horizontal reach. The grout shall be placed at a rate of 2 to 3 cubic meters per minute and to a minimum depth of 150 mm in the laterals and 760 mm in the main trough. Pipe shall be blocked as shown on project drawings.

3.1.2 Earthwork

Earthwork associated with the construction of the Container Transfer Facility and the connecting roads shall be performed in accordance with the approved earthwork plan, project drawings, and specifications.

3.1.3 Excavation

3.1.3.1 General

Waste sites shall be excavated as shown on the construction drawings and in compliance with the earthwork plan. Contaminated material shall be placed directly into containers or (upon CONTRACTOR approval) stockpiled for temporary staging. Stockpiling shall be either within the AOC or within a materials staging area. Loaded containers shall be hauled to the container transfer facility and staged for pickup by others. Loaded containers must meet radiological release requirements prior to pickup and transport from the contaminated area.

Excavations and operations shall be planned and executed in compliance with the applicable requirements in OSHA 29 CFR 1926, Subpart P - Excavations. Excavation has not been classified. Complete excavation regardless of the type, nature, or condition of the materials encountered.

The range of in place density for soil (from silt to boulders) is expected to range from 1.9 t per bank cubic meter to 2.4 t per bank cubic meter .

Swell factors for estimation of loose densities from in place densities will also vary depending upon many factors including moisture, specific material types, and handling method. Swell factors are anticipated to range from 10% to 20%.

3.1.3.2 Excavation Operations

3.1.3.2.1 116-N-3

Begin preparation for the demolition work at dam #1 by wetting and applying soil fixants to the soils in the bottom of the trench below the double tee panels. The 1st panel shall be demolished in place after CONTRACTOR approves the wetted condition of the soils in the bottom of the trench. The operations shall continue from dam #1 toward the crib by wetting the soils and applying fixants to soil in the bottom of the trench prior to demolishing each panel.

After the double tees are demolished, the trench excavation shall begin at dam #1 loading soil and demolished double tees into ERDF containers. The excavation shall be performed from the top edge of the trench and continue from Dam #1 towards the crib. Dose rates in the bottom of the trench prohibit access by personnel or equipment.

The tie in structure between the trench and crib shall be demolished in-place and loaded directly into ERDF containers.

Excavation of the crib shall begin with the removal of the panels in a quadrant format, one quadrant at a time (i.e., Northwest, Southwest, Southeast, and Northeast). For each quadrant, the panels shall be removed in one piece, providing a clean break at each grouted connection point (panels shall not be dropped or demolished on underlying soils), loaded, packaged, and transported to the Container Transfer Facility.

Once a panel is removed, the SUBCONTRACTOR shall place 510 mm of soil on the existing surface of the crib to provide shielding. The soil shall be obtained from surrounding areas (within 1 km) as directed by the CONTRACTOR. The SUBCONTRACTOR shall continue removing panels and placing soil per each individual quadrant up to the main trough. As panels are removed the support girders and laterals are exposed, the SUBCONTRACTOR shall remove the support girders to the size reduction area and cover the laterals with 510 mm of soil.

Once the panels and support girders for two (2) adjacent quadrants have been removed, the SUBCONTRACTOR may remove that portion of the center trough and associated girders, roof panels, between the two removed quadrants and separate the lateral weir boxes from the main trough. As portions of the center trough are removed, the SUBCONTRACTOR shall immediately place 510 mm of soil on the existing surface of the crib to provide shielding.

The main trough shall be sectioned into 9.1 m lengths with a diamond wire saw, or approved equal. SUBCONTRACTOR shall fix in place and protect the spread of contamination prior to the removal from the crib, during packaging activities, and loading onto transport vehicle. SUBCONTRACTOR shall complete all work in all four (4) quadrants and removal of the main trough prior to crib soil excavation to depth. Laterals shall be excavated along with the crib soil excavation to depth.

3.1.3.2.2 116-N-1

Excavation shall begin at trench and progress towards the crib. A minimum of 300 mm of soil shall be placed on the crib surface prior to beginning excavation. The soil shall be from the drill pad shown on project drawings. Excavation of the trench shall be similar to that of 116-N-3, wetting soils beneath panels and girders prior to demolishing in place. Demolished panels and soil shall be loaded into ERDF containers.

3.1.3.3 Field Screening

Field screening for contaminants will be used to assist in the establishment of current waste characteristics concurrently with the excavation of new materials. Newly exposed materials will be analyzed by CONTRACTOR using in situ measurements or samples of the materials to determine the radioactivity levels of the radionuclide contaminants. Excavation may be temporarily halted by CONTRACTOR to facilitate and safeguard the analytical work.

Newly exposed soils will also be periodically analyzed per the established sampling plan (sampling and analysis not within SUBCONTRACTOR scope of work) to determine the waste characteristics regarding other contaminants (e.g., organic or inorganic chemicals). Excavation may be temporarily halted by CONTRACTOR to facilitate and safeguard the sampling work. Access to sample points will be accomplished by 1) contouring the excavation and/or providing (and installing) shoring/ramps to permit manned entry in accordance with the requirements of OSHA and/or 2) retrieving soil with excavation equipment from excavation locations determined by the CONTRACTOR.

The CONTRACTOR will determine the waste characteristics and the radiological classification of excavated material. Field screening will be used prior to and during excavation activities to classify excavated material as contaminated or uncontaminated. Uncontaminated material may contain contaminants, which exceed cleanup levels, but cannot be readily detected by field screening. Quick turnaround laboratory analysis (24 to 72 hours) will be used to verify uncontaminated material. Double handling will be required if quick turnaround analysis indicates that initially designated uncontaminated material exceeds cleanup criteria.

The CONTRACTOR will perform field screening intermittently throughout the excavation process and may be necessary at the excavation bucket. Field screening frequency will increase as excavation depth increases. If radiological screening results show increased radioactivity, the frequency of field screening will increase. Particular attention will be paid to soil at pipe couplings, flanges, joints, valves, inspection manholes, and associated structures. Random screening of the spoil pile(s) or surface of the excavation will occur unless lithologic/color changes become apparent or buried debris and pipes are encountered. If these indicators are encountered, the frequency of field screening will increase.

3.1.3.4 Verification Sampling

Upon completion of waste site excavation, access to the excavation side wall and bottom soil will be required at discrete sample points for clean site verification sampling. Access to sample points will be accomplished by 1) contouring the excavation and/or providing

(and installing) shoring/ramps to permit manned entry in accordance with the requirements of OSHA and/or 2) retrieving soil with excavation equipment from excavation side walls and bottom at locations determined by the CONTRACTOR. Any portion of equipment used for contouring or retrieving soil (e.g., trackhoe bucket) shall be clean and free of radiological and chemical contamination so as not to cross contaminate the excavation. Should cross contamination occur, costs for additional excavation and decontamination shall be borne by the SUBCONTRACTOR.

The term "free of radiological contamination" means removable contamination less than 1,000 dpm/100 cm² beta-gamma and 20 dpm/100 cm² alpha (transuranics), plus less than 5,000 dpm/100 cm² (total and removable) beta-gamma and 100 dpm/100 cm² (total and removable) alpha (transuranics).

After removal of contaminated material, clean site verification sampling for pipelines shall occur at intervals of 200 linear meters nominal or as adjusted in the field based upon conditions encountered. Samples will be taken at random points within the 200 linear meter interval.

The SUBCONTRACTOR shall collect and archive sample material, as directed by the CONTRACTOR, in a RMA, set up near the work area. During site demobilization the SUBCONTRACTOR shall dispose of archived sample material (ship to ERDF or permanent on-site RMA).

Spoils piles will be subject to sampling by the CONTRACTOR to determine if overburden material and other uncontaminated spoils are acceptable for use as backfill. The SUBCONTRACTOR shall ensure CONTRACTOR access to such spoils piles for sampling. Handling or adding to spoil piles will not be permitted after sampling without CONTRACTOR approval.

3.1.3.5 Cross Contamination of Excavated Areas

The excavation shall be sequenced such that areas already excavated are not cross contaminated. Cross contamination due to pipe removal and/or size reduction (from pipe scale, rust, etc.) shall be removed from the excavation or staging area upon completion of pipe removal and/or size reduction activities. Side slopes of excavations shall be protected to prevent contaminated materials from eroding or sloughing into and contaminating materials at a lower elevation. Any additional material removal and replacement due to cross contamination shall be performed at no additional expense to the CONTRACTOR.

3.1.3.6 Trenching and Potholing

Trenching and potholing may be required to assess contaminant distribution associated with pipelines and waste sites. The trenching technique shall be utilized to identify contamination associated with pipelines. The trench shall have a maximum length of 9.14 m, a minimum width of 1.2 m, and a maximum depth of 4.57 m.

The potholing technique shall be utilized to identify contaminant distribution associated with waste sites. The potholes shall have a maximum length of 3 m, a maximum width of 3 m and a maximum depth of 4.57 m.

3.1.3.7 Radiological Dose Limitations

A combination of shielding, time and distance will be used to ensure worker exposure to external radiation is as low as reasonably achievable (ALARA). No individual may receive a dose in excess of 500 mrem per calendar year. Substitutions of employees to meet this limitation are not acceptable. Individual task operations (e.g., excavation, transport, queue operations, etc.) must also be limited to less than 500 mrem per calendar year.

3.1.3.8 Work Zone Delineation and Radiological Control

116-N-3, 116-N-1, 120-N-1, 120-N-2, and 100-N-58 currently exist within a Radiologically Controlled Area (RCA). SUBCONTRACTOR work at 120-N-1, 120-N-2, and 100-N-58 will not require radiological controls. The Hanford Site Radiological Control Manual (HSRCM-01) shall be used for posting guidance. HSRCM-01 and 10 CFR 835 shall be used for guidance to control work and to protect workers in radiological areas; both are publicly available documents.

The delineation and posting of these radiological work areas will be used to maintain radiological control of the work area and to minimize the potential for cross contamination outside of the contaminated work area. Work zone delineation and radiological control shall comply with the CONTRACTOR'S radiological control program, which is implemented through HSRCM-01. Any work area where radioactive contamination exists or is likely to exist, shall be posted by the SUBCONTRACTOR as a Contaminated Area (CA), a Soil Contamination Area (SCA), or other as directed by the CONTRACTOR. A Radiological Buffer Area (RBA) will be posted around the contaminated work area (CA, SCA, etc.), by the SUBCONTRACTOR, as directed by the CONTRACTOR. Equipment and personnel will be subject to a contamination survey upon exit from a radiological area, an RBA, an SCA requiring a Radiological Work Plan, an Airborne Radioactivity Area (ARA), a CA and/or a High Contamination Area (HCA),

as directed by the CONTRACTOR. Decontamination may be required to release personnel or equipment from areas containing radioactive contamination.

An area will be designated as the access/exit point from CA, HCA, and ARA. These access/exit points should be chosen to maintain exposure ALARA and may require additional SUBCONTRACTOR-supplied radiological shielding. This area shall be for the purpose of Anti-C disrobing, personnel surveying, and potential decontamination. The access/exit points will include, as a minimum, a step-off pad, laundry receptacle (for contaminated Anti-Cs), shoe cover receptacle, and trash receptacle.

The SUBCONTRACTOR shall provide and maintain RMA for the storage of radioactive material and equipment used to support radiological work in accordance with HSRCM-1. Only labeled radioactive material may be stored in the RMA. The RMA shall be posted by the SUBCONTRACTOR as directed by the CONTRACTOR. The RMA will contain material stored in sealed bags, boxes, drums, etc. The SUBCONTRACTOR shall ensure radioactive material is protected from intrusion of the elements (i.e., precipitation, runoff, dust, etc.) or shall move the RMA, as necessary, to keep the stored material protected from the elements.

3.1.4 Separation of Excavated Materials

3.1.4.1 General

Excavated materials will be considered either as uncontaminated material (subject to verification) or contaminated material. Specific form waste such as asbestos or demolition debris, will be categorized as either uncontaminated material or contaminated material, dependent upon the level of contamination.

3.1.4.2 Uncontaminated Materials

Verification that uncontaminated materials have contaminant levels below clean-up levels will be required prior to use as backfill. The CONTRACTOR will perform the verification. Whenever feasible, efforts shall be made to minimize the amount of materials ultimately disposed of at the ERDF.

3.1.4.3 Contaminated Materials

Contaminated materials will typically be within waste site boundaries. Contaminated materials will be assigned a waste profile based on process knowledge and field screening by the CONTRACTOR.

The waste profile may change, as directed by the CONTRACTOR, based on changing field characteristics detected by field screening or sample analysis.

Asbestos containing materials encountered during excavation work shall be managed in compliance with 40 CFR 61.140 through 157. Asbestos-containing materials requiring removal shall be performed by a supervisor and work crew that meet asbestos training requirements and comply with all the SUBCONTRACTOR health and safety programs. Asbestos-containing materials shall be packaged for removal in compliance with the ERDF Waste Acceptance Criteria (WAC).

Contaminated material containing free water, as determined by WAC 173-303-140 (4) (b) (Method 9095 - The Paint Filter Liquids Test), shall be dewatered or dried prior to transport from the Container Transfer Facility to ERDF.

3.1.5 Demolition and Removal of Structures and Abandoned Utilities

Demolish concrete, wooden or steel structures, piping and miscellaneous small-diameter utility piping, conduits, and wiring, as shown on the project drawings and as directed by the CONTRACTOR. Demolition shall consist of cutting, size reducing, demolishing, or reducing to rubble in order to meet inert landfill, backfill, or the ERDF WAC, whichever is applicable. SUBCONTRACTOR shall confirm that existing abandoned utilities are inactive before demolition.

Contaminated materials demolished and removed shall be loaded into ERDF containers as to not damage cover tarps. Containers shall have a 150 mm bed of soil underlying concrete and steel debris, pipe sections, cobbles, and boulders.

3.1.5.1 Size Reduction for Contaminated Material

Contaminated concrete shall be loaded into ERDF containers in one of two different forms: 1) reduced to rubble with a maximum dimension of approximately 300 mm or 2) as approved by CONTRACTOR, large blocks or slabs that fit inside an ERDF container without wedging into the chamfered portion of the container or extend above the walls, not to exceed the payload limit for the container (18.1 t), and loaded toward the rear of the box. Rebar shall be cut flush (less than 150 mm) with the surface. Loose rebar shall be cut to lengths of approximately 1.2 m and mixed with soil to the extent practical and placed to prevent damage to the tarp during handling (no rebar or concrete shall extend above the sidewalls of the container).

Steel plate shall not exceed 1.2 m in width or 3.0 m in length, shall not extend above the side walls of the container, shall not be bent over or folded to fit into containers, and shall be shipped separate from soils in containers. Steel plate shall not be forced or pushed

into the container in a manner that would inhibit it from sliding out of the container when dumped. Cribbing may be necessary to avoid binding of steel plate during unloading.

Extraneous attachments or extensions (e.g., flanges, valves, welded plate, protruding reinforcing steel from reinforced concrete debris, etc.) to individual pieces of pipe shall be removed.

Steel and cast iron pipe with diameters \geq DN1200 shall, at a minimum, be split in thirds lengthwise and sized less than 3 m in length. All lengthwise cuts shall be made with hydraulic shears. These pipe sections shall be nested (placed one length inside the other, with open side up) within the containers to maximize the load without exceeding the load limit per container or extending above the side walls of the container.

Steel and cast iron pipe with diameters \geq DN450 and $<$ DN1200 shall, at a minimum, be split in half lengthwise and sized less than 3 m in length. All lengthwise cuts shall be made with hydraulic shears. These pipe sections shall be nested (placed one length inside the other, with open side up) within the containers to maximize the load without exceeding the load limit per container or extending above the side walls of the container.

Steel and cast iron pipe with diameters \geq DN50 and $<$ DN450 are not required to be split and may be loaded in lengths up to 3 m. Tube steel sections shall have open ends to permit entry of grout.

Steel and cast iron pipe with diameters $<$ DN50 may be shipped with split, larger-sized pipe, or metal sheet/plate in lengths up to 3 m.

Any individual piece of miscellaneous metals/building debris/structural steel/conduit shall not exceed 1.2 m in width, 0.6 m in depth, or 3 m in length. The waste shall not be bent over or folded to fit into containers and shall be shipped separately from soils in containers to the maximum extent possible. The waste shall not extend above the side walls of the container, and shall not interfere with the tarps placed over the containers, or be loaded in the containers so as to become unstable during loading/unloading operations.

For any discrepancy found between specification criteria and Attachment 1, the more restrictive shall apply with the exception of the container payload. The container payload shall not exceed 18.1 t (40,000 lbs.).

Debris greater than 300 mm in any one dimension shall be loaded into side hinged containers only.

3.1.5.2 Size Reduction for Uncontaminated Material

Uncontaminated material shall be size reduced in one of two ways. Uncontaminated material that will be hauled to the inert landfill shall be reduced to a size which will comfortably fit in the back of the SUBCONTRACTOR supplied haul trucks. Uncontaminated material that will be placed in the uncontaminated portion of the trenches shall be reduced to a size no greater than 1 m in any dimension.

3.1.5.3 Asbestos-Containing Materials

Asbestos-containing materials (ACM) shall be removed from piping prior to circumferential cuts for size reduction. ACM may be left in place during lengthwise cuts for size reduction. All lengthwise cuts shall be made with hydraulic shears. During asbestos removal activities of the pipelines, the SUBCONTRACTOR is responsible for all monitoring and posting requirements. Clearance sampling (air sampling) associated with pipe abatement is not required, visual inspection will support ACM down posting. SUBCONTRACTOR personnel at the excavation site shall provide intermittent wetting with water spray nozzles to provide dust control and prevent uncontrolled air emissions.

ACM waste shall be wetted, double-bagged, and shipped separately in containers or packages provided by the CONTRACTOR, complying with Section 4.2.2 of the ERDF Waste Acceptance Criteria and the Supplemental Waste Acceptance Criteria for Bulk Shipments to the ERDF (Attachment 1). Bags shall be limited to a maximum weight of 18.1 kg (40 lbs) in order to be handled by an individual worker. Pipes containing ACM may be shipped (wetted and double bagged) after size reduction.

Intermittent wetting of pipe bearing ACM is required during all mechanical pipe cutting and pipe removal operations. During ACM removal all pipe bearing ACM shall be placed on two layers of 6 mil (or greater) plastic sheeting, and all remaining ACM shall be removed utilizing wet methods per routine OSHA and NESHAP guidance.

Asphaltic mastic residue with no visible signs of ACM may remain on the pipes.

3.1.5.4 Exposed Piping

After contaminated material has been removed, remaining piping and conduits exposed or within 1.5 m of a building, shall be capped or blocked. Pipes >DN300 shall be capped by first wrapping and taping with 0.25 mm (10-mil) reinforced polypropylene bags or sheets and then boxing the end with 19 mm exterior grade plywood as necessary for protection from backfill materials. Nominal DN300 pipes and smaller shall be capped, sealed with grout, or crushed shut if feasible.

3.1.6 Disposal of Materials

3.1.6.1 Uncontaminated Material

Uncontaminated vegetation obtained from site stripping shall be transported to the Uncontaminated Soil Storage Area and placed in a separate stockpile to be shown on the construction drawings. Other uncontaminated materials shall be stored or disposed by the SUBCONTRACTOR at a CONTRACTOR approved inert landfill within 17 km of the site.

The inert landfills (clear wells) are large on-site retired basins used for disposal of non-hazardous and non-radioactive inert or demolition waste, and are accessible by conventional dump trucks. The SUBCONTRACTOR shall request and coordinate with the CONTRACTOR regarding waste streams (material) to be disposed and CONTRACTOR will coordinate with the on-site Waste Operations Group. SUBCONTRACTOR may be required to apply a daily 150 mm ground cover (from a CONTRACTOR approved borrow source) on top of disposed material/debris.

Uncontaminated soil material ranging in size from silt to boulders may be stockpiled near the excavation from which it came. Double handling and transport of this material will be required if the material cannot be verified as uncontaminated or the stockpile location interferes with ongoing construction/remediation activities (e.g., contamination is detected in soil underlying the stockpiles). Double handling and transport of the soil shall be done at no additional cost to the CONTRACTOR. Containers for uncontaminated material are to be supplied by the SUBCONTRACTOR.

3.1.6.2 Contaminated Material

Contaminated material shall be loaded into containers and transported to the Container Transfer Facility where the material will be staged or transferred to transportation vehicles for ERDF disposal. The contaminated material placed in containers shall comply with the moisture content and other applicable requirements of the ERDF WAC and Supplemental WAC for Bulk Shipments to the ERDF (Attachment 1).

3.1.7 Excavated Materials Handling

3.1.7.1 ERDF Container Liner

Install the container liner in each container prior to loading contaminated materials. The container liner shall be placed inside the container and draped over the sides of the container. After materials are loaded into the container, the liner shall be folded and secured over the materials.

3.1.7.2 ERDF Container Loading

Containers shall be loaded evenly throughout. Material shall be placed to prevent movement or shifting of the load and damage to the container. Large materials shall not be placed directly against the rear gate. Material shall be able to be freely discharged when emptied at ERDF. The SUBCONTRACTOR shall be responsible for removing oversize material that does not freely discharge while emptying at ERDF.

3.1.7.3 B-25 Container (or approved equal) Loading

Containers shall be loaded evenly throughout and capped with 150 mm of grout to top of container. Material shall be placed so as not to cause any damage to the container. B-25 boxes shall be loaded onto ERDF roll-on/roll-off flatbed trailers.

3.1.7.4 Prevention of Liquid Accumulation in Containers

Containers (empty/full) shall be protected from the accumulation of free liquids. SUBCONTRACTOR shall not apply excessive amounts of water, which may cause soil to become saturated when placed into the containers. The SUBCONTRACTOR shall be responsible for preventing the accumulation of free standing water and release of water from containers waiting for transport to ERDF.

3.1.7.5 SUBCONTRACTOR Flat Beds/Low Boys

Material shipped on SUBCONTRACTOR trailers shall be packaged with flexible material (4 mil minimum thickness for each layer) wrapped and sealed around the radioactively contaminated item or with application of spray-on material (Pro-Tex Polyshield SS-100, an elastomeric polyurea coating). The flexible materials authorized for usage are: PERMALON XIOO FR, GRIFFOLYN T-55 TR, LORETEX 2000/2000 FR-6, LORETEX 3000/3000 FR-7, or Vinyl laminated cloth meeting military specification MIL-C-43006G, Types I and II, Class 1. The spray-on material shall be sprayed to a minimum thickness of 0.08 cm (0.03 in) with a color different from the item being sprayed. Openings and spaces which cannot be sprayed and that will prevent achievement of a continuous covering of the item shall be covered or filled to provide a surface for the spray-on material.

Contaminated item shall be individually wrapped (double wrapped if surface area is less than 37 m² or triple wrapped if surface area is greater than 37 m²) with the flexible materials with all surfaces and protrusions fully enclosed. The wrapping shall be sealed with reinforced cotton cloth tape and/or heat sealing. Sharp edges and corners shall be padded. Contaminated items shall not extend beyond the trailer dimensions, side or end(s) overhang will not be allowed.

Tiedown and blocking/bracing operations shall be in accordance with the provisions of the U.S. Department of Transportation (DOT) Motor Carrier Safety Regulations.

Oversize material transfer shall not take place when ambient temperatures are below 0°F, when the surface temperature of the outer packaging exceeds vendor specifications, when visibility is impaired by fog, rain, snow, or dust, or when wind speed exceeds 15 mph.

SUBCONTRACTOR shall inspect each package prior to transfer and document it is in accordance with Subcontract Documents. If packaging does not meet requirements SUBCONTRACTOR shall repackage oversize objects until requirements have been met.

3.1.8 Backfilling of Excavations

3.1.8.1 Waste Site and Pipe Trench Backfill

Waste site and pipe trench excavations shall be backfilled with approved backfill materials and contoured, as shown on the project drawings. Site restoration at waste sites shall be limited to backfilling and shall not include revegetation. For excavations greater than or equal to 4.57 m in depth, contaminated soil may be left in place (consistent with clean-up requirements), that may require radiological controls. For these situations, SUBCONTRACTOR shall operate equipment on uncontaminated backfill.

3.1.8.2 Compaction

Backfill shall be placed and compacted in accordance with Metric units of WSDOT M41-10, 2-03.3(14)C, "Compacting Earth Embankments," Method A or approved equal method.

3.2 MISCELLANEOUS FIELD SERVICES

3.2.1 Moisture and Dust Control

No visible dust will be allowed; dust shall be controlled by water spraying or other approved methods. The active excavation face(s) shall receive dust control measures during excavation operations, such as misting spray application of water during operations. The active excavation face(s) shall receive positive dust control measures other than water alone, such as non-regulated soil fixants (Soil Sement™ or CONTRACTOR approved equivalent), or penetrating crusting agents (magnesium chloride or CONTRACTOR approved equivalent) at the end of each shift. Positive dust control measures are also required immediately after excavation activities are shut down due to excessive winds (8.9 m/s). Contaminated or potentially contaminated stockpiles that will be inactive for periods of greater than 24 hours shall also receive positive dust control measures other than water alone. Dust suppressant application equipment shall be provided at no

additional expense to the CONTRACTOR. Upon approval, conditions may allow use of recycled water.

Dust from excavation and haul operations shall be controlled through engineering and administrative controls. Controlled locations include, but are not limited to, the limits of waste site excavations and access ramps, roads, parking areas, the Container Transfer Facility, and storage areas. The Container Transfer Facility and haul roads shall receive positive dust control measures other than water alone, that are penetrating and long lasting, such as penetrating crusting agents (magnesium chloride). Care shall be taken not to produce ponding of any applied material on the surface.

3.2.2 Roads

Maintain roads in accordance with the construction drawings and Subcontract Documents. Decontaminate roadways, as necessary, prior to project completion and systematically scarify entire surface of temporary haul roads to depth of placed material constructed by the SUBCONTRACTOR.

The road surface shall be maintained true to line and grade and cross-section by blading, watering, and rolling crushed surface material.

Existing pavement that becomes loose shall be removed and disposed, as appropriate, and replaced with equal.

Haul roads shall be constructed to provide access for the ERDF haul CONTRACTOR and shall conform to the criteria for ERDF haul vehicles (maximum 8% grade, minimum width of 4.0 m each way, minimum turning radius of 27.4 m). Where there is a potential of underground contamination, excavating will not be permitted in the construction of these haul roads.

For re-route and road improvement/construction, roads shall be bladed smooth, moistened, subgrade compacted, and crushed surfacing material placed to a compacted depth of 150 mm (minimum of 2 compacted lifts). Compaction shall be achieved by a minimum of 3 passes with a 8.16 t static weight vibratory roller with 17.7 t dynamic force. The access road re-routes shall be 6.10 m wide with a maximum grade of 6%, and a minimum turning radius of 18.3 m.

3.2.3 Container Transfer Facility

The Container Transfer Facility shall be constructed to the lines and grades as shown on the project drawings.

SUBCONTRACTOR shall proof roll the subgrade with an 8.16 t static weight vibratory roller for soft spots witnessed by the CONTRACTOR. If any soft spots are found, they shall be excavated and filled with compacted fill material.

Fill material shall be placed in maximum 300 mm lifts and compacted with a minimum of four passes with a 8.16 t static weight vibratory roller with 17.7 t dynamic force.

Crushed Surfacing material shall be placed in 76 mm lifts and compacted with a minimum of three passes with a 8.16 t static weight vibratory roller with 17.7 t dynamic force.

3.2.4 Illumination Requirements

Task lighting (portable light plant, light towers, etc.) for full illumination of the container transfer facility shall be provided and installed in accordance with the manufacturer's recommendations, Illuminating Engineering Society (IES), National Electrical Code (NEC), and OSHA requirements.

Task lighting shall be required in the Container Transfer Facility area to permit delivery and/or pickup of containers during off shift hours (year round) and in the winter months (October – March) to support inventory control of containers.

3.2.5 Backfill for Export Water Line

Backfill with fill material in lifts not to exceed 300 mm in depth. Each lift shall be compacted to 95% relative density (as determined by ASTM D1557). Equipment used to place and compact the backfill shall not be operated within 1.5 m of the pipeline. Hand operated mechanical tampers or vibratory plate compactors shall be used to compact fill adjacent to the pipe. Backfill shall proceed shown on project drawings until the top of the fill is even with the pipe's horizontal centerline (springline). No backfill below the springline elevation shall be placed directly against pipeline. Controlled density fill (CDF) shall be placed in the trough until the CDF is level with the pipes springline. After the CDF has reached 75% of its design strength, backfill above the pipe shall continue. No equipment shall be driven across the pipeline at any time during backfill operations. Only hand operated mechanical compaction equipment shall be used within 1 m of pipe.

3.2.6 Exclusion Fence

Exclusion fence shall be installed where shown on project drawings, attached, and supported with steel posts at 3.0 m intervals.

3.2.7 Material Staging Areas Outside the AOC

Material staging areas (soils, concrete panels, etc), shall be where shown on the construction drawings, or as approved by CONTRACTOR. Materials shall be placed on a 10-mil minimum layer of reinforced plastic and berm the plastic to prevent run-on/run-off of precipitation. The materials staging areas shall be roped or fenced off and "authorized personnel only" signs placed on all sides of area.

3.2.8 Size Reduction Area

Size reduction area(s) shall be located within the AOC and designed to safely perform all size reduction operations. The area(s) shall be bermed to control run on/off and lined with an engineered barrier to prevent cross contamination of the adjacent soils. The engineered barrier shall be designed to prevent cross contamination (penetration or damage to the engineered barrier and control of airborne contamination) based on the SUBCONTRACTOR's size reduction operations.

3.2.9 Water Fill Station

The water fill station shall be connected to a fire hydrant as shown on the project drawings. The connection shall use only the 63 mm (2.5 inch) hydrant outlet with a non-rising-stem gate valve with an 63 mm (2.5 inch) NH female inlet and a 38 mm (1.5 inch) NH male or female outlet. Hydrants shall be opened with a SUBCONTRACTOR supplied, CONTRACTOR approved hydrant wrench. Hydrant and hose shall be depressurized when not in use. Hydrant shall be used in the fully open or fully closed position only.

3.3 QUALITY ASSURANCE/QUALITY CONTROL

Establish and maintain an approved Quality Assurance/Quality Control (QA/QC) Program, in accordance with Exhibit "A," to assure compliance with subcontract requirements and shall maintain records of QC for operations. The program shall describe the system(s) for planning, performing, and assessing work that ensures materials, systems, results, and personnel meet stated quality, technical, and performance objectives. Activities related to Earthwork and Excavated Materials Handling shall conform to stated quality, technical, and performance objectives of the approved QA/QC Program.

4.0 YEAR 2000 WARRANTY

Any computer application or system or equipment provided under this specification shall be Year 2000 Compliant. As used in this warranty, the term "Year 2000 Compliant" means that the


Product, when configured and used according to the documented instructions will without manual intervention or interruption:

- a. Correctly handle and process date information before, during, and after January 1, 2000, accepting date input, proving date output and performing calculations, including but not limited to, sorting and sequencing, on dates or portions of dates;
- b. Function according to the documentation during and after January 1, 2000, without changes in operation resulting from the advent of the new century;
- c. Where appropriate, respond to two-digit date input in a way that resolves any ambiguity as to century in a disclosed, defined, and predetermined manner;
- d. Store and provide input of date information in ways that are unambiguous as to century; and
- e. Manage the leap year occurring in the year 2000, following the quad-centennial rule. The "quad-centennial rule" means (a) if the year is divisible by 4, it is a leap year, UNLESS (b) the year is also divisible by 100, then it is not a leap year, UNLESS (c) the year is also divisible by 400, then it is a leap year.

**Supplemental Waste Acceptance Criteria
For Bulk Shipments to the
Environmental Restoration Disposal Facility**

**SUPPLEMENTAL WASTE ACCEPTANCE CRITERIA
FOR BULK SHIPMENTS TO THE
ENVIRONMENTAL RESTORATION DISPOSAL FACILITY**

BHI-DIS 7-15-97 KW

1	7/8/97	Concrete and Rebar Revision	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
0	4/14/97	ISSUED FOR PROGRAM-WIDE USE	D. R. Myers	S. Thomas	S. Dumas	J. Dady
REV.	DATE	REASON FOR REVISION	ORIGINATOR	FIELD SUPPORT	RAD ENGINEER	PROJECT ENGINEER
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SUPPLEMENTAL WASTE ACCEPTANCE CRITERIA FOR BULK SHIPMENTS TO ERDF

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SUPPLEMENTAL WASTE ACCEPTANCE CRITERIA FOR BULK SHIPMENTS TO ERDF

1.0 GENERAL

Waste streams that comply with the ERDF Waste Acceptance Criteria and that meet the supplemental criteria provided in Section 1.0 can be accepted for disposal at ERDF as bulk shipments. Waste streams that comply with the ERDF Waste Acceptance Criteria but do not meet the supplemental criteria will be evaluated on a case-by-case basis for acceptance by ERDF for disposal. The process for the case-by-case evaluation is described in Section 2.0 below.

1.1 RADIOLOGICAL CONTAMINATION LIMITS

The below listed limits are recommendations from Operational Radiological Controls for the protection of the personnel involved in the disposal, spread and compaction of waste at ERDF. These limits are intended to be an extension of the ERDF Waste Acceptance Criteria (WAC).

1. No waste will have a loose (smearable) surface contamination in excess of 100,000 dpm/100cm² βγ or 400 dpm/100cm² α when averaged over the entire surface of the material.
2. No waste will have fixed contamination in excess of 75 mRad/hr/100cm² βγ or 80,000 dpm/100cm² α when averaged over the entire surface of the material.
3. No waste will have a radiation level reading in excess of 50 mR/hr when measured 30 centimeters from the surface.

1.2 PHYSICAL LIMITS

1.2.1 Concrete Debris

Concrete may be sent to the ERDF in one of two different forms. 1) Reduced to rubble with an maximum dimension of approximately 1 foot. It is preferred that this rubble be mixed with other waste soil so that it can be handled as soil at the ERDF. 2) Large blocks or slabs may be shipped under the following criteria: It must fit inside an RCI container without wedging into the chamfered portion of the container, it must not exceed the gross weight limit for the container (40,000 lb including the container), must not extend above the side walls of the container, shall not exceed 17 feet in length, and must be loaded toward the rear of the box. If the block or slab is wider than the bottom of the container it must be placed in the box in so that it will not become wedged in the chamfered portion of the box. Large blocks of concrete should only be loaded into 700 or 400 series containers ("barn-door" type containers). All rebar must be cut flush with the surface.

1.2.2 Steel Plate

Steel plate shall not exceed 4 ft. in width or 17 ft. in length. Steel plate shall not be bent over or folded to fit in containers and shall be shipped separate from soils in containers to the maximum extent possible.

Steel plates shall not extend above the side walls of the container, and shall not interfere with the tarps placed over the containers, or be loaded in the containers so as to become unstable during loading /unloading operations. Steel plate shall not be forced or pushed into the container in a manner that would inhibit them from sliding out of the container when dumped. Based on field engineering evaluation, cribbing may be necessary to avoid binding of steel plate during unloading.

1.2.3 Piping/Tube Steel

Diameters ≥ 18 -in. nominal shall, at a minimum, be split in half and shall be sized less than 17 ft. in length. These pipes shall be nested (placed one length inside the other, with open side up) within the containers to maximize the load without exceeding the 19.3 ton load limit per container. These pipe sections shall not extend above the side walls of the container -- to interfere with the plastic covers and tarps placed over the containers or to become unstable during loading /unloading operations.

Diameters ≥ 2 -in. and < 18 -in. nominal are not required to be split and may be loaded in lengths up to 17 ft.. Tube steel sections shall have open ends to permit entry of grout.

Diameters < 2 -in. nominal may be direct buried at ERDF, may be shipped with split, larger-sized pipe, or metal sheet/plate in lengths up to 17 ft..

Piping with Asbestos Containing Materials (ACM) attached must have all ACM removed from the piping prior to shipping. Also, the ACM must be properly wetted, handled, and packaged as well as shipped separately complying with Section 4.2.2 of the WAC.

1.2.4 Regulated Asbestos Containing Material

Asbestos Containing Materials (ACM), shall be wetted, double-bagged, and shall be shipped separately in RCIE containers or packages provided by the project, complying with Section 4.2.2 of the WAC. Bags shall be limited to a maximum weight of 40 lbs. in order to be handled by an individual worker.

1.2.5 Misc Metals/Building Debris/Structural Steel/Conduit

Any individual piece shall not exceed 4 ft. in width, 2 ft. in depth, or 17 ft. in length. The waste shall not be bent over or folded to fit in containers and shall be shipped separate from soils in containers to the maximum extent possible. The waste shall not extend above the side walls of the container, and shall not interfere with the tarps placed over the containers, or be loaded in the containers so as to become unstable during loading /unloading operations.

1.2.6 Equipment/Containerized (Barrels/Boxes) Waste

Equipment and containerized waste shall meet the requirements of the WAC, shall not exceed the radiological contamination limits of Section 1.1 of this document, and be segregated from the other wastes so that the waste can be placed and compacted with construction equipment to reduce void space for incorporation into the structural fill.

1.2.7 Soft Waste

Soft waste shall meet the requirements of the WAC, not exceed the radiological contamination limits of Section 1.1 of this document, and be segregated from the other wastes so that the soft waste can be spread in thin layers for incorporation into the structural fill.

1.2.8 Rebar

Rebar should be cut to lengths of approximately four feet and mixed with soil to the extent practical. Rebar pieces from D&D projects where soil is not common can be placed in RCI containers with other hard debris.

2.0 SPECIAL HANDLED WASTE

Waste streams that comply with the ERDF Waste Acceptance Criteria, but do not meet the supplemental criteria provided in Section 1.0 will be considered for disposal at ERDF on a case-by-case basis. Items such as the following examples may qualify in this category:

Equipment & Large Pumps

Work Tables

Large Doors

Sludge/Sediment

Aluminum

Piping to be shipped with asbestos attached

Containerized Waste that can not be opened/ruptured during compaction activities at ERDF

The project (waste generator) is responsible for identifying standard waste streams, volume estimates, and generation schedules and forwarding this information to the ERDF Project Engineer in order to initiate joint development of supplemental waste acceptance criteria for the project's special handled waste.

Specific information on waste stream will be size, level of contamination, material, void space, compactability, and quantity of material will also be provided by the project (waste generator). This information will be provided to the ERDF Project Engineer in writing and will be evaluated to determine additional waste preparation and packaging requirements.